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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/618,049

07/11/2003

Peter Mardilovich

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/618,049

Applicant(s)

MARDILOVICH ET AL.

Examiner

Katherine A. Bareford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 21-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment of January 8, 2007 has been received and entered. With the amendment, claims 1-20 remain pending for examination and claims 21-30 remain withdrawn from consideration.

Claim Rejections - 35 USC § 102

2. The rejection of claims 1-4, 6, 8-9, 13-14 and 18 under 35 U.S.C. 102(b) as being anticipated by Svedberg et al (US 6194032) is withdrawn due to applicant's amendments of January 8, 2007 requiring the use of separate metal and reducing compositions.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under

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37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The rejection of claims 10, 11, 16, 17 and 20 under 35 U.S.C. 103(a) as being unpatentable over Svedberg et al (US 6194032) is withdrawn due to applicant's amendments of January 8, 2007 requiring the use of separate metal and reducing compositions.

6. The rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Svedberg as applied to claims 1-4, 6, 8-9 and 13-14 above, and further in view of Japan 08-319575 (hereinafter '575) is withdrawn due to applicant's amendments of January 8, 2007 requiring the use of separate metal and reducing compositions.

7. The rejection of claims 7 and 15 under 35 U.S.C. 103(a) as being unpatentable over Svedberg as applied to claims 1-4, 6, 8-9 and 13-14 above, and further in view of McCormack et al (US 4301196) is withdrawn due to applicant's amendments of January 8, 2007 requiring the use of separate metal and reducing compositions.

8. The rejection of claim 19 under 35 U.S.C. 103(a) as being unpatentable over Svedberg as applied to claims 1-4, 6, 8-9 and 13-14 above, and further in view of Wells

(US 3918927) is withdrawn due to applicant's amendments of January 8, 2007 requiring the use of separate metal and reducing compositions.

9. Claims 1-4, 6-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson (US 6120588) in view of McCormack (US 4301196).

Jacobson teaches a method of forming metal patterns on a substrate. Column 9, lines 15-30. A pattern is decided for application. Column 9, lines 15-30. A metal composition is ink-jetted in the pattern. Figure 9A and column 9, line 60 through column 10, line 10 (the silver nitrate). A separate reducing agent composition with a reducing agent is also ink jetted in the pattern. Figure 9A and column 9, line 60 through column 10, line 10 (the aldehyde). The reducing agent contacts the metal composition and reacts with the metal salt to form a reduced metal. Figure 9A and column 9, line 60 through column 10, line 10 (by the process of "electroless plating"). While Jacobson describes silver nitrate plating, the reference teaches that many other chemistries known in the art of electroless plating can be used. Column 10, lines 1-5.

Claim 2: the metal can be silver, etc. Figure 9A and column 9, line 60 through column 10, line 10 (the silver nitrate).

Claim 3: the salt can be AgNO_3 . Column 10, line 1.

Claim 6: the reducing agent can include aldehyde. Figure 9A and column 9, line 60 through column 10, line 10 (the aldehyde).

Claim 12: the reducing agent is ink jetted on the pattern in a offset area with respect to the metal composition. Figure 9A. A portion of each material would not overlap each other due to the offset nature of their sprays.

Jacobson teaches all the features of these claims except (1) the electroless active layer (claim 1), (2) the specific reducing agent (claims 6-7), (3) the specific substrate (claim 8), (4) the heating (claim 9), (5) the multiple layers and depth (claims 10-11), (6) the initiator features (claims 13-18) and (7) the circuit pattern (claim 20).

However, McCormack teaches a method of applying an electroless copper plating. Column 3, lines 60-68. The surface can be pretreated with an initiator treatment, such as by depositing an electroless initiator of palladium and tin, to provide an electroless active layer. Column 6, line 50 through column 7, line 5. The pretreatment can be by immersing the substrate the initiator. Column 7, lines 1-5. The plating can use a composition with metal and reducing agent of formaldehyde or hydrazines, which is applied to the pretreated electroless active layer. Column 3, lines 60-65, column 5, lines 40-50 and column 6, lines 50-65. The substrate can be ceramics, glass, polymers, etc. Column 7, lines 30-35. During treating the temperature can be 20-80 degrees C. Column 7, lines 20-30. The coating is to be applied until a desired thickness has been built up. Column 7, lines 5-10. McCormack teaches that the plating can be used to apply circuit patterns. Column 1, lines 25-50. The plating composition can be applied by immersion or spraying. Column 7, lines 5-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jacobson to use the conventional electroless plating features taught by McCormack in the inkjet electroless plating process with an expectation of a desirable plated article being achieved, because Jacobson teaches a method of inkjet electroless plating that can be used with conventional electroless plating chemistry and McCormack teaches conventional electroless plating chemistry, including the use of an initiator layer of electroless active material, conventional reducing agents such as hydrazines, specific substrate materials, such as ceramics, the conventional heating of the compositions during application, the conventional materials and application of the initiator layer and the conventional deposition of the material to form circuit patterns. As to the multiple applications to form layers of the desired depth, it would have been obvious to one of ordinary skill in the art to do so, given McCormacks teaching to provide the treatment until the desired depth has been reached, and one of ordinary skill in the art would optimize the depth based on the desired purpose of the coating to be applied. It further would have been obvious to deposit the initiator by ink jetting in a non-continuous pattern to correspond to the metal pattern to be applied so that the minimum amount of material can be used.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson in view of McCormack as applied to claims 1-4, 6-18 and 20 above, and further in view of Japan 08-319575 (hereinafter '575).

Jacobson in view of McCormack teaches all the features of this claim except what palladium salt can be used.

However, '575 teaches that $\text{Pd}(\text{NH}_3)_4\text{Cl}_2$ can be used as the metal salt for an electroless deposition. Abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jacobson in view of McCormack to use $\text{Pd}(\text{NH}_3)_4\text{Cl}_2$ as the palladium salt when depositing palladium as suggested by '575 in order to provide a desirable palladium coating, because Jacobson in view of McCormack teaches electroless coating using conventional materials and '575 teaches that $\text{Pd}(\text{NH}_3)_4\text{Cl}_2$ is a desirable metal salt for electrolessly depositing palladium.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson in view of McCormack as applied to claims 1-4, 6-18 and 20 above, and further in view of Wells (US 3918927).

Jacobson in view of McCormack teaches all the features of this claim except the marring of the substrate.

However, Wells teaches that the application of activator solution of palladium chloride is performed in acidic environments. Column 11, lines 54-57. Wells also teaches that it is well known to prepare a surface for electroless coating by marring the surface by the etching with acid before coating. See column 3, lines 25-35 and 65-66 and column 11, lines 40-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jacobson in view of McCormack to mar the substrate by etching from acid as suggested by Wells in order to provide a desirable electroless coating, because Jacobson in view of McCormack teaches that an initiator coating with palladium can be applied and Wells teaches that when applying such a coating it is known to provide it in an acid environment which would further provide marring by etching from the acid and also teaches to further prepare the surface by etching with acid.

Response to Arguments

12. Applicant's arguments filed January 8, 2007 have been fully considered but they are not persuasive.

(A) The rejections using Svedberg as the primary reference have been withdrawn due to applicant's amendments of January 8, 2007 requiring the use of separate metal and reducing compositions.

(B) As to the 35 USC 103 rejections using Jacobson in view of McCormack, applicant argues that Jacobson does not teach the electroless active layer as claimed, and does not teach defining a pattern on the electroless layer (apparently meaning electroless active layer) or having the metal ion reduced on the electroless layer (apparently meaning electroless active layer). Applicant further argues that as to motivation for combining references, while the Examiner has referred to the phrase in

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Jacobson of "many other chemistries known in the art of electroless plating can be used" as justifying the present motivation, such a generic reference does not give motivation to use a specific compound or solution, but rather the motivation must show the advantage to be derived. According to applicant, nothing in Jacobson suggests the advantage to be derived from using the electroless layer (apparently meaning electroless active layer) found in McCormack, nor does it provide other chemistries that would benefit from the combination, rather Jacobson discloses an ink jet system for "depositing metallic or semiconductive traces" without an electroless layer (apparently meaning electroless active layer), and as such there would be no benefit to add an electroless layer (apparently meaning electroless active layer). Applicant further argues that the only possible motivation for making the present combination would arise from impermissible hindsight.

The Examiner has reviewed applicant's arguments, however, the rejection is maintained. The Examiner has noted that Jacobson does not teach the initial presence of the electroless active layer onto which the other materials are applied and reacted. However, the Examiner has cited McCormack as to the desirability of providing such an electroless active layer when performing conventional electroless plating, such as the plating of copper, and to apply the reducing agent and metal composition to this layer. Applicant has argued that Jacobson does not motivation or advantage to be derived from using the electroless layer found in McCormack. It is the Examiner's position that

applicant has mistaken the requirements needed to combine the reference. As discussed in MPEP 2143.01:

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so >. In re Kahn, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) (discussing rationale underlying the motivation-suggestion-teaching requirement as a guard against using hindsight in an obviousness analysis). The teaching, suggestion, or motivation must be found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

MPEP 2143.01 further notes that:

... The court emphasized that the proper inquiry is "whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination," not whether there is something in the prior art as a whole to suggest that the combination is the most desirable combination available." Id. In affirming the Board's obviousness rejection, the court held that the prior art as a whole suggested the desirability of the combination of shoe sole limitations claimed, thus providing a motivation to combine, which need not be supported by a finding that the prior art suggested that the combination claimed by the applicant was the preferred, or most desirable combination over the other alternatives. Id. (The Examiner notes that the citation was to In re Fulton, 391 F.3d 1195, 73 USPQ2d 1141 (Fed. Cir. 2004))

As described in the citations above, the primary reference (Jacobson) does not have to teach or suggest the advantage to be derived from using an electroless active layer. Rather one looks at the combined teachings of the prior art as a whole, which would include both references – to Jacobson and McCormack, to determine where there was

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motivation to combine. Here, the Examiner has cited Jacobson as teaching that many other chemistries known in the art of electroless plating can be used to indicate the suggestion to look beyond the reference to Jacobson to other art for electroless plating to determine desirable features, and the Examiner has cited McCormack as showing the desirability of using an electroless active layer prior to electroless plating, with McCormack teaching that prior to plating copper, for example, it is desirable to pretreat with a sensitizing solution, which would provide an electroless active layer as claimed, in order to get "improved deposition" (see column 7, lines 1-5, for example). Therefore, the prior art as a whole suggests the desirability of providing an electroless active layer to achieve a desirable plated article with improved deposition before performing electroless plating of the article. As a result, sufficient motivation to modify the primary reference to Jacobson is shown. While Jacobson may not show electroless coating application onto an electroless active layer, the combination of references shows why this would be a desirable modification. As to the various other materials and features taught by McCormack, such as the use of a specific reducing agent or substrate, applicant has not provided specific arguments against the combination. However, the Examiner does note that McCormack also provides the benefits of desirably electro^{less} plated articles that are achieved by using these materials and features. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning.

But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Here, as discussed above, all of the claimed features are found in the references to Jacobson and McCormack and the motivation to combine is clearly shown in the combined teachings of Jacobson and McCormack. As to statements with regard to the digital ink printing of Jacobson with the "bath" of McCormack, the Examiner notes that McCormack is open to other application methods for the electroless plating than immersion, including spraying (see column 7, lines 5-10).

(C) As the further use of Wells, applicant argues that Wells does not teach marring of the substrate as argued by the Examiner, rather, the acidic palladium chloride solution is used to remove tin salts, and thus does not teach the claimed marring.

The Examiner has reviewed these arguments, however, the rejection is maintained. At the very least, Wells shows that it is desirable to etch the substrate with acid prior to plating and thus "mar" the surface area to be plated. See column 3, lines 25-35 and 65-66 and column 11, lines 40-45 and the rejection above. As a result, the claimed marring of the substrate along the pattern would be provided.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.


Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER